Fiberlink®
5002 Series

RS-232 Digital Data Transmission System

CSI Communications Specialties, Inc.

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Contents

General Information 3

Installation Guide 4

Interface Connections 5

- 5002 Set to DTE 5
- 5002 Set to DCE 5

Technical Specifications 6

Operating Pointers 7

Troubleshooting 8

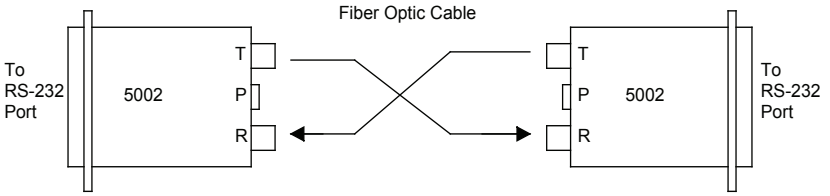
Maintenance and Repairs 9

Warranty 10

General Information

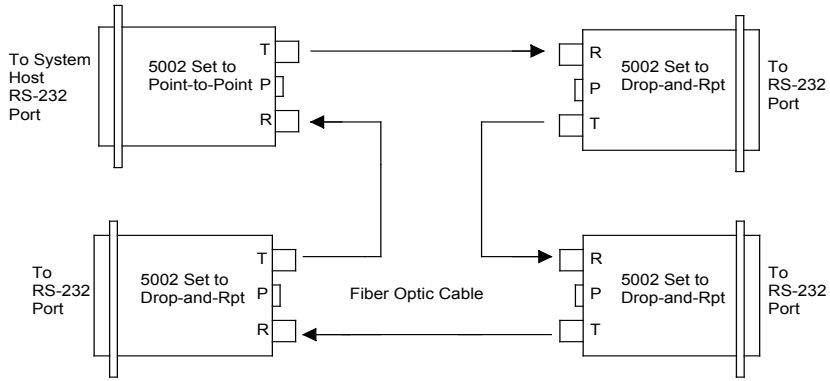
The Fiberlink 5002 is a solid state "optical modem" that transmits RS-232 type data. It is designed to operate, error free, over distances of more than 2 miles via standard multimode fiber optic cable. The unit is ideal for extending the normal transmission range of most RS-232 compatible equipment and accessories and may be user-configured to either the DCE or DTE mode. The 5002 can be used to implement a point-to-point or a drop-and-repeat system.

Typical Point-to-Point System Configuration



Operating Power May Be Applied Through The "P" Port or Through The DB-25 Connector Pins

Typical Drop-and-Repeat System Configuration



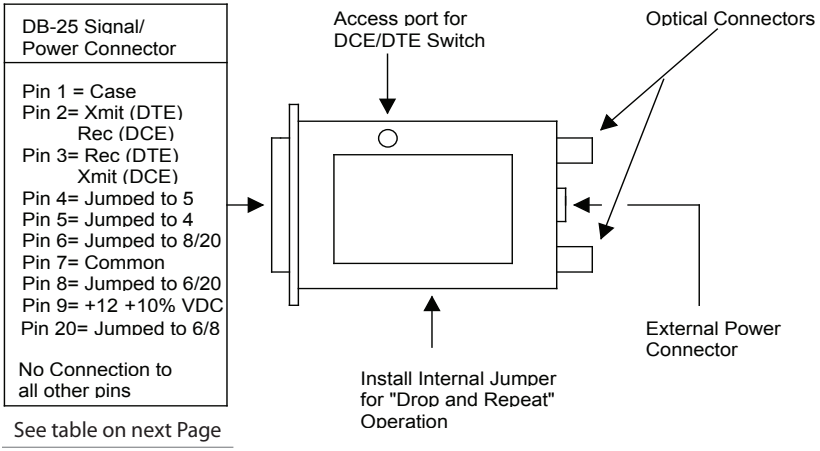
Operating Power May Be Applied Through The "P" Port or Through The DB-25 Connector Pins

Note that the 5002 unit connected to the system Host does not repeat optically received data. All other units re-transmit both optically received and locally generated data.

Installation Guide

Following are installation instructions for the Fiberlink 5002:

Individual Transceivers:



See table on next Page

Internal Jumper Pin Setting for Drop and Repeat Operation

For "Drop and Repeat" operation, the case must be snapped open and the internal "D/R" jumper installed. When this is done, the unit will accept, repeat and output any data within the loop in which it is installed. For point-to-point operation, the "D/R" jumper must be removed.

DB-25 Connector Considerations

The 5002 is provided with an industry standard male DB-25 connector. For those applications where a female connector is required, Communications Specialties offers a male-to-female converter (part number 113024). This device plugs directly into the existing connector and extends the overall length of the unit by ¾ inch.

Interface Connections

The following tabulation indicates what to look for if the system does not operate properly. It assumes that correct operating power (12 VDC) has been applied to either pin 9 of the DB-25 connector or to the coaxial power connector (not both).

5002 set to DTE

Pin	Description	Function
1	Chassis Ground	Chassis Ground
2	Transmit Data	(input) Data to be transmitted on fiber
3	Receive Data	(output) Data received from fiber
4	Request to Send	Connected to pin 5 internally
5	Clear to Send	Connected to pin 4 internally
6	Data Set Ready	Connected to pins 8/20 internally
7	Signal Ground	Signal Ground
8	Data Carrier Detect	Connected to pins 6/20 internally
20	Data Terminal Ready	Connected to pins 6/8 internally

5002 set to DCE

Pin	Description	Function
1	Chassis Ground	Chassis Ground
2	Receive Data	(input) Data received from fiber
3	Transmit Data	(output) Data to be transmitted on fiber
4	Request to Send	(input) Connected to pin 5 internally
5	Clear to Send	(output) Connected to pin 4 internally
6	Data Set Ready	Connected to pins 8/20 internally
7	Signal Ground	Signal Ground
8	Data Carrier Detect	Connected to pins 6/20 internally
20	Data Terminal Ready	Connected to pins 6/8 internally

Technical Specification

Data Transmission Rate	DC to 120 Kb/s
Operating Mode	Simplex, Duplex, Asynchronous Point-to-Point, Drop and Repeat
Compatibility	RS-232D, DCE or DTE
Input Signal Voltage	+ 5 to +30 volts per EIA RS-232D
Output signal Voltage	+ 5 to +10 volts per EIA RS-232D
Optical Loss Budget	15 dB typical 62.5u Fiber
Operating Wavelength	850 nm
Optical Connectors	Industry standard ST
Signal Connector	Industry standard DB-25P
Power Connector	2-Pin Coaxial
Operating Temperature Range	-35 to +75 degrees, C

Operating Pointers for the 5002

Power:
The 5002 can obtain all of its operating power through the RS-232 port to which it is connected or through the power connector. Power is applied by connecting pin 9 of the DB-25 connector or the center pin of the power jack to a +12 VDC (+ 10%) power supply and pin 7 of the DB-25 connector or the shell of the power jack to the 12 volt return.

Fiber Optic Cable:
The 5002 is designed to operate with 62.5 micron core diameter multimode fiber optic cable. The maximum transmission length will depend on the optical attenuation of the cable used. In most cases the unit is capable of transmitting signals over distances of greater than 2 miles. Always be certain that when connecting two units together, the "T" port of one is connected to the "R" port of the other.

Operating Mode:
In the point-to-point mode, the unit functions as a simple full duplex transceiver. In the drop-and-repeat mode, any one unit (at a time) can input data. All units will output data simultaneously. In this mode, one unit must be set to the non-repeat or point-to-point mode to prevent loop lock-up. This unit is usually connected to the host or loop controller.

Troubleshooting

Remember to check attenuation of the fiber optic cable. The system will only operate properly if these specifications fall within the range of the system's loss budget.

Multimode fiber optic cable contains an optical fiber with a light carrying "core" that is only .0025 inches (62.5 microns) in diameter. Single mode fiber optic cable has an even smaller "core," only .00032 to .0004 inches (8-10 microns). This is smaller than a human hair! Therefore, any minute particles of dirt or dust can easily block the fiber from accepting or radiating light. To prevent this from happening, always use the provided dust caps when ever optical connectors are exposed to air. It is also a good idea to gently clean the tip of an optical connector with a lint-free cloth moistened with alcohol whenever dust is suspected.

An optical power meter, such as the Fiberlink® 6615, a visible light source, such as the Fiberlink® 6610, and a Three Wavelength Light Source, such as the Fiberlink® 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

Finally, although multimode and single mode devices may look the same, they will not operate properly together. Using the wrong device or fiber can easily add more attenuation than specified, resulting in poor overall performance. It should be noted that some of our fiber optic products support both single mode and multimode fiber in the same unit.

If, after reviewing the above possibilities, the system is still not operating, please contact the Customer Service Department for further assistance. If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Maintenance and Repairs

The Fiberlink® 5002 Series has been manufactured using the latest semiconductor devices and techniques that electronic technology has to offer. They have been designed for long, reliable and trouble-free service and are not normally field repairable.

Should difficulty be encountered, Communications Specialties maintains a complete service facility to render accurate, timely and reliable service of all products.

The only maintenance that can be provided by the user is to ascertain that optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate. Please see the Troubleshooting section of this manual for additional information.

An optical power meter, such as the Fiberlink® 6615, a visible light source, such as the Fiberlink® 6610, and a Three Wavelength Light Source, such as the Fiberlink® 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

All other questions or comments should be directed to our Customer Service Department. It should be noted that many "problems" can easily be solved by a simple telephone call.

If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Communications Specialties, Inc. (CSI) warrants that, for a period of three years after purchase by the Buyer, this product will be free from defects in material and workmanship under normal use and service. A Return Material Authorization (RMA) number must be obtained from CSI before any equipment is returned by the Buyer. All materials must be shipped to CSI at the expense and risk of the Buyer.

CSI's obligation under this warranty will be limited, at its option, to either the repair or replacement of defective units, including free materials and labor. In no event shall CSI be responsible for any incidental or consequential damages or loss of profits or goodwill.

CSI shall not be obligated to replace or repair equipment that has been damaged by fire, war, acts of God, or similar causes, or equipment that has been serviced by unauthorized personnel, altered, improperly installed, or abused.

RMA numbers and repairs can be obtained from:

Communications Specialties, Inc.
55 Cabot Court
Hauppauge, NY 11788 USA
Tel: (631) 273-0404
Fax: (631) 273-1638

RMA numbers can also be obtained from our web site: **commspecial.com**

Please have your serial number available.

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